

REMARKS

Applicants respectfully request reconsideration of this application in view of the amendments and remarks made herein.

Claims 46-55 and 57-69 are pending in the application. Claims 68-69 have been added. The claims have been amended to more particularly point out and distinctly claim the subject matter of the invention. Applicants respectfully submit that the new and amended claims are supported by the original disclosure of this application. As such, no new matter has been added by these amendments.

Claim Rejections

1. The Claims are Enabled to Person of Skill in the Art to Practice the Invention

Claims 46-65 are rejected under 35 U.S.C § 112, first paragraph. The Examiner alleges that although the specification, while being enabling for a method of inducing nematode resistance in a transgenic plant by introduction of a chimeric gene comprising the pokeweed antiviral protein (PAP) encoding sequences under the control of a nematode inducible promoter in a transgenic plant, does not reasonably provide enablement for a method of inducing cell death in any plant cells with the exemplified or non-exemplified pokeweed encoding nucleic acids. The Examiner further maintains that the prior art teaches that transformation of a plant with a PAP encoding nucleic acid is highly unpredictable. The Examiner alleges that Applicants' own working example demonstrates the unpredictability inherent in transforming a plant with any nucleic acid encoding PAP because transformation of tobacco cells with mature PAP-S encoding sequences under the control of a inducible promoter failed to produce transformed tobacco cells.

The Examiner further cites Lodge et al. (Proc. Natl. Acad. Sci. USA 90:7089-7093; "Lodge") for allegedly teaching that the expression of PAP in transgenic plants may result in undesired phenotypes such as stunted, molted and sterility in the plant. Barbieri et al. (Biochimica et Biophysica Acta, 1154:237-282; "Barbieri") is said by the Examiner to teach that plant RIPs including PAP can act on their ribosomes only at high levels of concentrations. The Examiner maintains that Tumer et al (Proc. Natl. Acad. Sci. USA 94:3866-3871; "Tumer") teaches that transgenic tobacco plants expressing high levels of PAP with point mutations showed growth reduction and lesions on their leaves, while transgenic plants expressing high levels of active site mutant PAP didn't show antiviral activity, and while transgenic plants expressing low levels of C-terminal deletion mutant

were resistant to virus and showed normal growth. According to the Examiner, Applicant has not provided evidence to support the broad scope of the claimed invention.

The test for enablement is whether one reasonably skilled in the art could make or use the invention, without undue experimentation, from the disclosure in the patent coupled with information known in the art at the time the patent application was filed. *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988).

With regard to the Examiner's comments regarding the inability to transform tobacco with nucleic acids encoding the mature PAP-S, it is noteworthy that ***Applicants were nevertheless able to generate transgenic tobacco plants expressing the Pro-PAP-S protein.*** Moreover, the generation of such transgenic tobacco plants was accomplished using the very methods disclosed in the specification. In this regard, the Examiner's attention is respectfully invited to the working examples of the specification, which clearly demonstrate that expression of Pro-PAP-S in both tobacco and potato plants at the site of nematode feeding led to differences in nematode size and resistance. (See, ¶¶ 0159-0176)

With regard to the Examiner's comments regarding the experimental data of Lodge, Barbieri and Tumer, it should be noted that the present invention provides a solution to the problems associated with either constitutive (Lodge and Turner) or low level expression of PAP (Barbieri) which may lead to unpredictability. Specifically, Applicants have placed expression of the PAP gene under the control of an ***inducible promoter*** that ensures that the PAP gene is expressed ***only*** in a desired specific cell type, ***at a level sufficient to induce cell death*** only in that desired cell type. In contrast, both Lodge and Tumer cloned the PAP gene into expression vectors wherein expression of the PAP gene was placed under the control of a constitutive promoter, *i.e.*, either a cauliflower mosaic virus or figwort mosaic virus promoter. It is therefore not surprising that the plants of Lodge and Turner showed undesirable phenotypes.

Accordingly, Applicants respectfully submit that these and all pending claims satisfy the enablement requirement of 35 U.S.C. § 112, first paragraph. Applicant respectfully request that this ground of rejection be withdrawn.

2. 35 U.S.C. § 112, Second Paragraph

Claims 46-55 and 57-65 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended the rejected claims to

more particularly point out and distinctly claim the subject matter that applicants regard as their invention.

According to the Examiner, claims 46-50, 56, 59-60 and 63-65 are indefinite because it is unclear what is encompassed by “allowing natural development of a plant” or how to allow “natural development” of a plant. Applicants have amended the claims to replace the phrase “allowing natural development of a plant” with the phrase “allowing cell type specific expression of a pokeweed antiviral protein in specific cells of the plant.”

According to the Examiner, claim 58 is indefinite because it is unclear if there is more than one “mature PAP-S protein” “Pro-PAP-S”, “PAP-S β protein”, or “PAP-S α protein.” Applicant’s have amended claim 58 to indicate that the coding sequence “encodes mature pokeweed antiviral protein, mature PAP-S protein, pro-PAP-S-protein, PAP-S β protein, or PAP-S α protein.”

Applicants respectfully submit that the claims as amended are definite as required by 35 U.S.C. § 112, second paragraph. Applicant, therefore, respectfully request that this ground of rejection be withdrawn.

3. Claims are Not Anticipated by the Cited Art

The Examiner has rejected claims 66 and 67 under 35 U.S.C. § 102 (b) as being anticipated Kanieswski *et al.* (U.S. Patent No. 6,015,940, hereafter “Kanieswski”). According to the Examiner, Kanieswski teaches a construct comprising a DNA sequence encoding PAP-S protein and inducible promoter for expressing in a tissue-specific manner in cells where viral infection is known to occur. The Examiner maintains that PAP-S inherently contains PAP-S α and β .

Claims 66 and 67 have been amended to specify that the claimed molecule comprises nucleic acid molecules encoding mature PAP-S α protein and not mature PAP-S β protein (claim 66) or mature PAP-S β protein and not mature PAP-S α protein (claim 67) and an inducible promoter which induces expression of mature PAP-S α protein (claim 66) and mature PAP-S β protein (claim 67), respectively, in cells of a plant upon exposing the plant to a pathogen or a chemical or which is cell type specific and induced during natural plant. Support for the amended claims can be found on page 10, third full paragraph through page 11, first full paragraph of the specification.

Applicants assert that the claims as amended, do not encompass molecules comprising nucleic acid molecules encoding the PAP-S precursor. Therefore, the claims are not

anticipated by Kanieswski. Accordingly, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. §102(b).

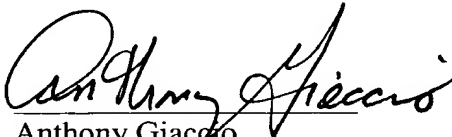
CONCLUSION

Applicants respectfully submit that all pending claims 46-55 and 57-67 of this application are presently in condition for allowance. Prompt and favorable reconsideration and allowance of all pending claims is respectfully requested.

The Commissioner is authorized to charge any fees relevant to this filing to Deposit Account No. 11-0600. The Examiner is invited to contact the undersigned to discuss any matter in this application.

Respectfully submitted,
KENYON & KENYON LLP

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Anthony Giacchino
USPTO Reg. No. 39,684

One Broadway
New York, NY 10004
Telephone: (212) 425-7200
Facsimile: (212) 425-5288